ITP Recommendation # 3.2b: Voluntary Inclusion of Energy Intensity in Urban Water Management Plans (12/3/13)

Potential amendments to §10631 of the Urban Water Management Planning Act and the accompanying DWR UWMP Guidebook for the calculation and display of the energy intensity of urban water deliveries.

Purpose and Background: California has the most energy intensive water supply in the United States. In many cases, water utilities are among the largest energy users in their community, on par with local industrial users. Energy use is typically 30-40% of a water utility's operating and maintenance costs, often exceeding labor budgets, even with optimized load management.[1]

The purpose of this recommendation is to encourage the reporting of information about the energy intensity of water delivered to customers in a uniform format and at regular intervals, e.g., every five years. The value of reporting energy by water agencies is significant and recognized as a need at the national, state, and local planning levels by the US Environmental Protection Agency and California state agencies. This recommendation will remove a major impediment that currently inhibits the cost sharing collaboration between the water and energy sectors, and will allow the water industry and policymakers a better understanding of the potential opportunities for future cost-effective joint water/energy efficiency programs. [2]

California's major energy utilities currently invest between 2 and 3% of gross sales on energy efficiency measures, resulting in a pool of funds of more than $1 billion spent on efficiency projects and programs each year. The CPUC has directed state-regulated energy companies to investigate the potential for water-saving measures to achieve cost-effective energy savings. However, the development of these joint programs has been hindered by a lack of current and uniform information from water suppliers. Therefore, this proposal would serve the purpose of creating a credible dataset for water suppliers' energy use that would be updated every five years and made accessible to electric and gas utilities interested in developing joint programs that yield both water and energy savings. Such programs would be very beneficial to water suppliers by providing a potential source of funding and expertise to achieve water savings at reduced cost by conserving energy and water simultaneously.

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[1] 2009 American Council for an Energy-Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Industry. http://www.aceee.org/files/proceedings/2009/data/papers/6_83.pdf

[2] 2013 Saving Water and Energy Together: Helping Utilities Build Better Program (Young, Rachel, ACEEE and Alliance for Water Efficiency)
http://www.aceee.org/sites/default/files/publications/researchreports/e13h.pdf

The **energy intensity** of urban water deliveries can be defined as the cumulative amount of energy (either in kWh or therms) required to convey, treat, and distribute a specified volume of water to a customer. This value is often expressed in kWh/MG or kWh/AF, with therms converted to KWh equivalents. For a retail water supplier, the "customer" is an end user; for a wholesale water supplier, the customer is another water supplier receiving water from the wholesaler.

Recognizing that the initial calculation of the energy intensity of water may take at least some staff time and resources not currently committed to the UWMP process, the ITP recommends that DWR facilitate voluntary reporting in a standardized format by interested water agencies. Such an approach will impose no general burden on water suppliers, but should produce a substantial amount of searchable data not otherwise available that will be useful to both water and energy managers. Credible energy intensity values are likely to become a pre-requisite for participating in joint efficiency projects with energy utilities, so the calculation of these values is in the best interest of most water agencies. And although the initial organization and presentation of such information will require new effort, the processes establish for initial reporting should allow subsequent calculations to become routine.

Recommendations for Administrative Action: To ensure that the information reported serves its intended purpose, guidance for this portion of the UWMP Guidebook should be developed by DWR in consultation with the CPUC, as well as other stakeholders. Retail water suppliers would have the option to voluntarily report the average energy intensity of the *water system that they operate.* In other words, retail agencies would only report the *incremental* energy used for local supplies and to treat and distribute water to their customers. This is the energy they can account for (not any "upstream" or "embedded" energy in the water they receive from a wholesaler).

Because of inter-annual variability related to weather and supply changes, the energy intensity value should be a multi-year average using a consistent method specified by DWR in its guidance document. For each component of a water system (supply, transmission, distribution, potable water treatment, HQ functions), an estimate of the amount of energy used as a % of the water supplier's total energy use would be made, using guidance from DWR to ensure a consistent approach across water suppliers.

Wholesale water suppliers would report on the average energy intensity of the water they deliver to each retail agency they serve. Recognizing that the source water delivered to a retail agency may differ from year to year based on availability, an average over a period of 3-5 years could be employed. If the energy intensity of water delivered to multiple retailers is indistinguishable, those supplies could be grouped together.

The DWR Guidebook should include a methodology and/or information sources where retailers and wholesalers can find energy intensity calculation tools and best practices for compiling their energy data so as to calculate these values.

The Guidebook should also be amended to request simple information regarding energy and gas utility service within the urban water system area. Both wholesale and retail agencies would identify their own supplier(s) of electricity and natural gas, and any self-generated energy. Additionally, retail agencies would identify the electric and gas utilities whose service area overlaps their own, i.e., who provide service to the same customers as the water agency.

Recommended Statutory Language: After §10631(i) add the following:

(j) include, on a voluntary basis when available and as appropriate, an estimate of the energy intensity of water provided to customers as follows:

(1) the average annual energy intensity of the water system, represented by the overall energy use of the water supplier divided by the total volume of water delivered to customers.

(2) the percentage of the water supplier's total energy use that is attributable to:

(A) water supply/conveyance.

(B) potable water treatment.

(C) water distribution.

(D) headquarters and administrative functions.

(3) for wholesale suppliers, in addition to (1) and (2) above, the average annual energy intensity of the water delivered to each water supplier that is a wholesale customer.